group of 9,688 [22.3%] that could not be defined). The third and fourth are subgroups and consist of simultaneous BKAs 25,443 (74.8% of 34,015) and staged BKAs of 8571 (25.2% of 34,015). Except for the length of stay, the authors refer to percentages and not actual "n" values in most of the results, and without stating which of the BKA groups, it makes it difficult to discern the actual values. Can the author supply the reader with actual value for mortality in the simultaneous BKA group and how this compares directly with the UKA group?

Based on the NIS database and the definitions used by the authors, the number of patients required to undergo BKA compared with UKA to cause one additional mortality is 625, that is, 625 people need to undergo BKA to cause one additional death that would not have occurred if they had only received a UKA. The evidence as demonstrated by the authors may be compelling; however, their results are based on how the authors defined the BKA and UKA groups and the NIS database studied.

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In Reply:

We thank Drs. Gurunathan and Harrison *et al.* for their interest in our publication. To address Dr. Gurunathan's comments, we would like to point out that in making our statements we did not purely adopt or quote the findings presented by Sliva *et al.*,[1] but we critically reviewed and interpreted them in the context of our study. Although the total number of patients in the study by Sliva *et al.* was 332, only 267—as reported in our paper—had their procedure performed during the same hospitalization (n = 241 staggered [*i.e.*, 4–7 days apart] and n = 26 sequential [*i.e.*, during the same anesthetic]). Because our study focused only on patients whose procedures were performed during the same hospitalization, we correctly identified this subgroup of interest (n = 241 + 26 = 267).[2]

Importantly, major complications occurred in four patients in the staggered group, whereas none occurred in the sequential group. Although the numbers in the study may not be sufficient to show statistical significance, major adverse events in the perioperative period are of great clinical concern. This is the reason why mortality was chosen as the primary outcome in our analysis. The importance of mortality and major complications is appropriately made evident by Dr. Gurunathan's comment, regarding their highest incidence in the staged bilateral knee arthroplasty patients, despite not reaching statistical significance as well. This issue gets to the heart of the problem when studying low-incidence outcomes, such as mortality, in studies with limited numbers because often authors conclude that the procedures can be considered safe based on underpowered results failing to show statistically significant differences between groups. With perioperative mortality being the primary outcome in our study, we tried to overcome the problem of small sample size by using the largest all-payer database available in the United States. Although our interpretation regarding the study of Sliva *et al.* may have not been in line with the authors' conclusion, who based their statements of safety on the occurrence of overwhelmingly minor complications, we believe that our independent interpretation of their findings regarding mortality and major complications is correct. We do not dispute, however, that by being more precise in our presentation, we could have avoided this miscommunication.

The sentence should read: "…in a study including 267 patients who underwent bilateral knee arthroplasty during the same hospitalization, Sliva *et al.* found that bilateral procedures performed 4–7 days apart were associated with higher incidence of mortality and major morbidity when compared with simultaneously performed procedures. No statistical difference could be shown however, likely because of low numbers."

Dr. Harrison *et al.* posed questions regarding the validity of the Nationwide Inpatient Sample and its ability to produce nationally representative data for total knee arthroplasty procedures. We would like to refer the interested reader to the publication "Introduction to the Healthcare Cost and Utilization Project Nationwide Inpatient Sample" published by the Agency for Healthcare Research and Quality* for general background information on this database.

To answer their specific questions:

1. The total number of entries for hospitalizations for the years between 1998 and 2006 was 68,836,152. This means that of all hospitalizations, 0.97% were associated with primary knee replacement. One of the stated goals of the Nationwide Inpatient Sample is to provide data that allow for national estimates, which confirm confidence in this data source as shown by its wide use in the medical research field when seeking to provide nationally representative data. Further, the frequencies for a specific time frame published and derived from another nationally representative database—the Na-

* www.hcup-us.ahrq.gov/db/nation/nis/NIS_2007_INTRODUCTION.pdf. Accessed March 3, 2010.

tional Hospital Discharge Survey—are very similar, providing another source of validation.[3]

2. Although differences in complications (in this case device-related) between unilateral and bilateral knee arthroplasty were found, we can only restate that no causal relationships can be established from these data, and thus, possible explanations for the findings have to remain speculative.
3. As explained in the article, databases of this kind are limited by the amount of variables they collect. As such, detailed information on laterality, patient choice, causality in decision-making processes, and procedures performed during different hospitalizations are not available. Thus, the very good points made by Harrison *et al.* regarding such cofounders cannot be addressed further in this study.
4. The total number of deaths was 73 (0.26%) in the simultaneous bilateral, 21 (0.29%) in the staged bilateral, and 845 (0.14%) in the unilateral group. The weighted national estimates for in-hospital mortality based on these entries were n = 354, n = 107, and n = 4,121, respectively.
5. As with any study, the results and conclusions have to be interpreted in the context of its design. Thus, definitions of bilateral knee arthroplasty and unilateral total knee arthroplasty as presented in the methodology have to be considered.

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Is GlideScope® the Best Way to Intubate?

To the Editor:

The ease of obtaining a good view of glottis with GlideScope® videolaryngoscope (Verathon Medical, Bothell, WA) has led to its increasing popularity over recent years. So much so that it is not only frequently used as the first-attempt intubation device in difficult intubation scenarios but is also being used increasingly as the first choice for securing airway in elective cases.[1] I agree with Dr. Stanley[1] that securing the airway in the shortest time and with minimal instrumentation is in the best interest of the patient and represents good clinical care. However, I tend to disagree that the GlideScope® meets all of these criteria. Although I find this device useful in difficult intubations, I rarely use it before performing a direct laryngoscopy in anticipated difficult intubations and almost never as a first-attempt intubation device in intubations not expected to be difficult. The major problem with GlideScope® is the difficulty in directing the endotracheal tube (ETT) toward the vocal cords.[2] Hence, the use of stylet is almost mandatory while intubating under GlideScope® guidance. Despite the fact that a variety of stylets and ETTs have been suggested to increase the chances of successful intubation with GlideScope®, there are numerous reports of airway trauma during intubation attempts.[3] The GlideScope® rigid stylet (Verathon Medical) is not always useful in directing the ETT toward the cords.[4] However, a malleable stylet is usually effective.[2] Although a 90° angulation of the stylet-loaded ETT is usually successful in most intubation attempts, sometimes a change in angulation is needed, and although it can be achieved easily, this requires the tube to be taken out before intubation can be attempted again, increasing the intubation time.

The eventual goal in airway management is to be able to pass the tube through the cords to ventilate the lungs and having a good view of the glottis greatly facilitates this goal; it is helpful to think of "laryngoscopy" and "intubation" as two separate steps in airway management, wherein difficulty could be encountered at the level of either step. Although satisfactory view of the glottis may sometimes not be achieved with direct laryngoscopy, intubation does not take very long if a reasonable view is achieved. GlideScope®, on the contrary, provides a good view of the glottis readily but the intubation is not always straightforward.[2,3] Also, it is not uncommon for intubation to be successful with a direct laryngoscopy after the failure of GlideScope®-guided intubation.[2] In patients with normal airway anatomy, GlideScope® use may be associated with an increased risk of airway trauma and postoperative sore throat.[5] A recent study has demonstrated that in anticipated difficult intubations, although the incidence of difficult laryngoscopy (Cormack–Lehane ≥ III) is considerably less with GlideScope® compared with conventional Macintosh laryngoscope, the laryngoscopy time is similar between the two, and importantly, the intubation time is significantly less with the Macintosh blade.[6] Experience from the emergency department also shows that although the rates of successful intubation on first attempt are not significantly different between GlideScope® and direct laryngoscopy, intubation using GlideScope® requires significantly more time.[7] Moreover, an assistant is frequently required to pass the ETT over the stylet.[2] Hence, I personally find it hard to justify using GlideScope® as the first-choice method for laryngoscopy, particularly for rapid sequence induction. Conversely, the equipment for conventional direct laryngoscopy is widely available, simpler to use, and less expensive than GlideScope®. In my opinion, the GlideScope® is a useful backup tool for intubations that failed with direct laryngoscopy. So, although I agree with